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## NOTES ON RARE AND LITTLE KNOWN SPECIES OF N. A. LEPIDOPTERA

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Not all of the little known species of N. A. Lepidoptera are necessarily rare once the "Mother Lode" has been discovered. A few years ago I found *Argynnis nokomis apacheana* Skinner the most abundant butterfly in Round Valley, Inyo Co., Calif. taking over five hundred specimens as easily as one might collect the same number of *Colias* in an eastern clover-field. Hundreds of acres of this valley are sub-irrigated and are covered with native violets which are overgrown and shaded by cultivated fields of red clover and alfalfa on which the adults feed while the violets are food for the hidden larvae. Conditions are thus made ideal for this species. The males may be seen first in early August flying in search of females which remain hidden deep down in the growth until after fertilization. In late August and September both sexes become abundant and easily captured while feeding upon the clover blossoms.

*Papilio indra* Reak. may be considered a rare species but is abundant in spots where the food plant occurs in profusion, such as Pine Creek Canon above 7,000 feet elevation on the Eastern slope of the High Sierras above Round Valley. *Papilio bairdi* Edw. is another locally common species which I have taken by hundreds in the space of less than an acre in extent in the Charleston Mts. of S. E. Nevada.

*Neophasia terlooti,* Behr and form *princetonia* may be taken in great numbers in the higher Mts. of Southern Arizona if one is fortunate enough to locate a colony among the tall pines. The males may be seen flying about the tree tops, sometimes two hundred feet above ground, and only occasionally coming down within reach of the net. The less observed but more strikingly handsome females come to water where they are drowned in small pools in considerable numbers.

In the Baboquivaria Mts., Pima Co., Ariz., I have seen swarms of *Eurema* about seepage spots in dry weather where fifty or more specimens could be captured at a single sweep of the net. The most abundant species being *mexicana,* Bdv. *nicippe,* Cram. *proterpia,* Fabr. and *gundlachia,* Poey, with an occasional *boisduvaliana* Feld.

There are some species however which seem destined to remain among the really rare captures and where even the most favorable environment fails to produce more than a stray specimen or two. Among these is *Megathymus ursus* Poling of which species I've never seen but two additional specimens since the type of many years ago although careful search has been made through the type locality and in similar surroundings in Arizona. This species, like *yuccae* Bdv. and Lec. and its varieties, seems to be solitary in habits while I have

found other species of the genus such as *aryxna* Dyar, *neumoegeni* Edw. and *polingi* Skin. assembled in large numbers at favorite water-holes in the yucca country of Arizona. They simply must have water and will fly many miles with marvelous swiftness to reach it. Therefore when water-holes are farthest apart and the heat most intense these species appear in greatest numbers. In extremely hot, dry periods they make their first appearance before it is light enough to see them clearly and at this time make a great buzzing when disturbed but do not leave until their thirst is appeased. They appear again from ten to eleven a.m. coming and leaving in increasing numbers until one p.m. The last appearance in numbers is just before the sun disappears in the evening.

Among the species I have met with in the Sphingidae family which would be classed as nowhere common I might mention *Dictyosoma elsa* Strk. of which I have only collected a total of two specimens in somewhat over twenty years of almost continuous collecting through nearly all the important mountains and valleys of the southwest, yet *elsa* is a fairly well known species to entomologists as compared to *Lepisesia* (*Arctonotus*) *terlooi* Edw. of which I took ♂ and ♀ in the Baboquivaria Mts. of Pima Co. Ariz.—the first and I believe the only U. S. record. The habits of this most beautiful of the smaller Sphingidae remain a mystery, inasmuch as the first specimen, the ♂, was taken in daytime about 8 a.m. and the second, a female, came to light after dark in the evening about 9 p.m. I am inclined to think the latter record will prove the exception rather than the rule and that the species is normally a day flying insect. I have even taken butterflies at light occasionally when they appear to have been startled from a near by resting place. The male was captured in one hand as it was slowly hovering over the flowers of *Amorphia* sp. The utter fearlessness to danger may be one reason for the great rarity of the species for the rocks around this particular bush swarmed with lizards which are but one of the natural enemies of Lepidopterous insects. A pair of Black Pewees with their nest close by covered this spot quite systematically and just below the area covered by the Black Pewees an open space of less than an acre harbored a pair of Say's Pewees with young on the wing but still being fed by the parents. At this period in the family life of these flycatchters few butterflies ever succeeded in crossing the open space without capture. With the ever watchful army of insectiverous birds and lizards, preying insects and the bats at night it is not surprising that some species seem to hover on the very verge of extinction. The surprising fact is that other species, apparently no better equipped in color mimicry and habits tending to self-preservation, appear to multiply in the face of these same foes. My own conclusion is that the greatest mortality occurs in pre-imago stages and that the actual flight period of the adult of some very rare species is but a matter of moments in the male, as an average, while the species may be preserved, though on the verge of extermination, by the fact that fertilization of the female has ocurred and perhaps a few eggs laid before the first flight takes place. In the case of species like those of the Cossidae and Aegeriidae which would seem to gain greater protection from habits of internal feeding in the larval stages and which are very rare and almost unknown in collections there is a strong tendency to elude observation of even the keenest observer. The bats are doubtless the greatest of all moth collectors. I doubt if all the moths in

all the collections of the United States or the world for that matter would equal in number the specimens captured in one night by the combined army of bats, the world over. Some nights the moths do not seem to start flying to light until an hour or two after dark but if you will step out in the shadows you may see them coming in numbers not yet sufficient to pass the picket line of bats. When they commence coming in faster than the bats can handle them and still later when the bats have finished their first evening meal then your screens will soon become spotted with moths. But the bats are served first—and they don't miss their catch.

To successfully capture the rare species of Cossidae it is necessary to know the food plants and date of flight pretty accurately. I took the type lot of *Comadia dolli* Barnes and Benj., about a dozen specimens, in one night *under* a clump of very large mesquite trees on the desert near Las Vegas, Nev. Had I placed my lights across an open space from the trees on a nearby knoll where it could be seen over far greater area I do not believe a single Cossid would have reached it past the bat-brigade for as it was a few of the more daring ones came within arms reach of me in pursuit under the trees. In So. Ariz., *Hamilcara atra* B. and McD., several males and the first known females came to light under two trees growing so closely together that I was unable to determine whether it was the mesquite or the Hackberry which harbored the brood. In Inyo Co. Cal. a considerable series of *Acossus orc* Strk., *Givira marga* B. and McD., and a *Comadia* of the *bertholdi* group came to light under a grove of large cottonwoods some of which were dead or dying from the effects of borings apparently from these three species.

## NEW NEARCTIC DIPTERA MOSTLY FROM CANADA.*

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The Diptera described in the following pages have mostly been collected by Mr. N. K. Bigelow of the Royal Ontario Museum, Toronto, and represent a few of the undescribed forms secured by him during 1924 and 1925. During the summer of 1924, Mr. Bigelow collected in Delaware Co., Iowa, securing many Diptera in addition to other insects. The summer of 1925 was spent at Lake Abitibi with headquarters at Low Bush, and notwithstanding the unfavorable nature of the weather, something over twelve thousand Diptera were secured, many of which are of more than ordinary interest due to the great extension of their distributional range.

Lake Abitibi is situated on the Grand Trunk Pacific Railway near the borders of Ontario and Quebec and represents the farthest north point in Eastern Ontario which may be reached conveniently by railroad. The region is in the central belt of the Canadian zone and much of its interest is due to the fact that "Martin's Falls, Albany River," so frequently met with in Walker's "List" is in the same life zone and the fauna of the two districts is very similar. Another interesting comparison is made possible by the fact that Mr. Bigelow has collected extensively at Lake Nipigon, a region only a little removed from

*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

the Albany River. Many species secured at Nipigon are present in large numbers in the Abitibi material but very many forms are represented which did not show up in previous collections. The town of Emo, also mentioned in the localities, is in the Rainy River District, also in the same life zone.

SYRPHIDAE

## Chrysogaster bigelowi n. sp.

Belongs to the *versipellis* group and closely related to *C. ithaca* Shannon from which it is distinguished by the flattened, lateral third of the face, reddish brown third and black basal antennal segments and absence of true facial tubercle although there is a gentle, elongate swelling. Length 7.25 to 7.5 mm.

*Male.* Face shining black, a triangle extending from the antennae to below the middle of the face, narrowly connected above with a narrower lateral triangle extending downwards along the orbits, greyish pollinose; lateral third of face flattened, the middle also unusually flat, the lateral depressions with a few weak oblique rugulae below, and on the whole surface a series of faint fine curved lines ending in the orbits; in profile the face is perpendicular with a faint tubercular swelling below the middle, the oral margin produced strongly and obliquely forward. Face highly polished below the depressions and tubercular swelling; depressions and lower slopes with sparse short black hairs; cheeks in front with a small ochreous pollinose triangle on the orbits. Frontal triangle rather small, fairly acute above, swollen, with strong depression above each antenna and faint median sulca, the depressions greatly reducing the swollen portion of the front, the surface of which is subgranular and quite bare, not shining, the orbits with a single row of black hairs. Vertical triangle prominent, longer than wide, more shining than the front, black pilose. Occiput, thinly greyish pollinose, with short, fine hair which is black above, white below. Antennae black, the third segment reddish brown, wider than long, sub-rectangular, the apex oblique the corners sharply rounded. Arista less than half as long as half the facial width at middle, reddish brown, tapering.

Mesonotum and scutellum opaque black, with long, abundant black pile. Pleura shining black, black pilose, propleura pale pilose.

Legs wholly deep black; pile black; some pale hairs on middle femora at base posteriorly and on whole posterior surface of the hind pair.

Wings pale brownish, paler posteriorly, yellowish basally. Squamae fuscous, the lower lobe chiefly white with brown border and fringe. Halteres reddish yellow, the knob sometimes brown. Apical crossvein slightly sinuous, oblique, not joining third vein at right angle. Discal crossvein curved inwards near the middle.

First three abdominal segments and basal triangle on fourth opaque black, the lateral margins, expanded basally on the second and third segments, and the fourth segment, aeneous or shining greenish black. First segment and the shining areas, except sometimes on most of the fourth segment, yellowish pilose, the pile elsewhere black, erect.

*Female.* Face without any trace of tubercle, the hairs on the lateral depressions and side margins very fine, sparse, white; rugulae a little more numerous. Front seven-tenths as wide as eye, gently broadened anteriorly, the pile

short, black, parted in the middle, inclined forwards and outwards. Less than the median third of the front is smooth, the lateral depressions very little impressed and with only two or three slightly curved furrows below, elsewhere slightly roughened. Mesonotum pale yellowish pilose in front of the suture; a lateral triangle between base of wings and suture and an indefinite prescutellar triangle also with pale pile. Pleura wholly cinereous pilose; pile of notum subappressed, the pale pile fine, the black hairs extending forward inside the humeri. Wings yellowish, becoming lightly cinereous apically and posteriorly. Second, third and base of fourth abdominal segments sub-opaque, the sides much more widely shining black than in the male.

*Holotype.*— ♂, Low Bush, Lake Abitibi, June 9, 1925, (N. K. Bigelow); No. 1801 in the Canadian National Collection, Ottawa.

*Allotype.*— ♀, same locality, June 17.

*Paratypes*—2 ♂, 2 ♀, same locality and collector, June 17; 3 ♂, 2 ♀, June 16; ♀, June 6; 2 ♂, ♀, June 11; ♀, June 13, ♂, June 14, ♂, June 20, ♀, July 17, ♀, July 23, ♀, July 25, 1925; all collected at Low Bush by Mr. Bigelow. Paratypes in Royal Ontario Museum of Zoology.

### **Melanostoma pallitarsis** n. sp.

Related to *scalare F.* but at once distinguished by the yellowish posterior tarsi which are only slightly darkened apically. Length, 7.75 to 8.5 mm.

*Male.* Head black, the frontal triangle largely bronzed; face moderately thickly greyish yellow to greyish pollinose, the frontal triangle broadly brownish yellow pollinose along the orbits. Face slightly retreating, the tubercle low, shining; frontal triangle swollen in middle, fairly acute above, black pilose. Vertical triangle black haired, the vertex and occiput yellow pilose; cheeks and face with whitish pile, the latter sometimes black haired on the upper angles; occipital cilia black. Eyes contiguous for a distance equal to length of frontal triangle, the facets enlarged on upper third. Antennae reddish, the third segmet black on broad upper portion, especially apically. Arista reddish, distinctly pubescent.

Mesonotum black or greenish black, more or less aeneous, cinereous pilose. Pleura aeneous, greyish pollinose, paler pilose. Scutellum wholly pale pilose.

Legs reddish yellow; coxae black, tarsi very slightly darkened above on the apical segments or wholly pale. Pile pale, only dark on the upper surface of the posterior tibiae and tarsi and the upper surface of the apical three segments of the other tarsi.

Wings cinereous hyaline. Stigma pale luteous. Squamae white, with white fringe. Halteres yellow.

Abdomen black and reddish or yellow: opaque black with three pairs of large pale spots which are longer than wide and more or less distinctly separated from the lateral margins on their apical half, the lateral margins, apical fourth of fourth segment and the fifth segment shining bronze-black. Spots on second segment large, oblique in front, normally reaching the lateral margin in half their width, produced broadly forward along the sides but not reaching the anterior margin of the segment. Third segment with only the apical fifth black,

the median vitta slightly tapering posteriorly, not quite as wide as the posterior fascia; almost the apical third of the fourth segment is black, the median vitta narrower than on the preceding segment; fifth segment with broadly interrupted, medianly narrowed basal reddish or metallic reddish fascia.

Pile pale yellowish on pale portions and sides of apical two segments. Sternites yellow, the first and rectangular median spot on the second, brownish.

*Female.* Front over two-fifths as wide as eye, widened anteriorly, shining black, with broadly interrupted grey pollinose triangles below the middle, connected along the orbits with the facial pollen. Pile fine, white, black or fuscous on upper third or more, sometimes pale at vertex. Pile of thorax shorter, sub-appressed. Spots on second abdominal segment more oval, rarely cut off from the side margins; spots on second and third segments with the inner margins almost parallel, posterior margin rounded, the outer edge oblique, the spots reaching the side margins by a broad basal production. Fifth sement with the basal two thirds pale, the black posterior margin produced somewhat forward in the middle. Abdomen at most sub-opaque, rather shining. Pile yellow, black on black portions of second to fourth segments. First pair of spots usually reaching base of second segment at the sides.

*Holotype*—♂, Madison, Wis., July 17, 1918 (C. L. Fluke); No. 1864 in the Canadian Natiqnal Collection, Ottawa.

*Allotype*—♀, Dane Co., Wisconsin, July 29, 1918, (C. L. Fluke).

*Paratypes*—♂, Cedar Lake, Ill., Aug. 4, 1906; ♂, Freeport, Ill., July 4, 1917; 2 ♀, Mahomet, Ill., April 23, 1925, (T. H. Frison); ♂, Bottineau, N.D., Aug. 22, 1923, (H. A. Robertson); ♂, Washada, Man., Aug. 3, 1922, (N. Criddle); ♂, Jordan, Ont., June 6, 1920, (Curran); ♂, Orillia, Ont., July 13, 1923, (Curran); 2 ♂, Dane Co., Wis., July 29, 1918, (C. L. Fluke); 9 ♂, 4 ♀, Madison, Wis., July 7, 8, 16, 17, 1918, 1919, (Fluke).

TACHINIDAE

**Besseria incompleta** n. sp.

Differs from *B. brevipennis* Lw. in having the abdomen black beyond the second segment, beneath the scutellum and a tapering median vitta on the second segment; the base of the third segment is narrowly reddish laterally; apical crossvein absent.

Length 4.25 mm. *Female.* Black except as indicated above. Facial depression thinly pollinose; parafacials silvery white. Oral margin and antennal base prominent, the face rather evenly concave, as long below as at antennae, the median portion not depressed; parafacials only slightly narrowed below. Parafrontals shining black; not as wide as the reddish brown frontal vitta; front a little narrower than eye. Occiput thinly cinereous pollinose, the orbits silvery in most lights. Only a few pale hairs below the neck. Palpi short, slightly tapering, black. Antennae wholly black; arista thickened on basal half.

Thorax shining black, the humeri and notopleura silvery pollinose, the pleura very thinly so. Presutural acrosticals, two pairs (the anterior pair absent); dorsocentrals, three anterior and posterior; only prescutellars present; bristles rather weak, the posthumeral and posterior sub-lateral absent. Scutellum with two pairs of strong marginals, the apical pair decussate. A single sternopleural; pteropleura bare.

Legs black, the bristles weak. Claws black, pulvilli brownish grey.

Wings lightly cinereous, becoming paler posteriorly. Apical crossvein absent; a single weak bristle at base of third vein.

Abdomen without bristles, twice as long as wide, strongly convex and curved downwards; second tergite produced on its ventral edges and bearing many very short, stout spines; sternites, except the first two, absent, the venter membranous, white. Genitalia over one fourth the size of abdomen, cylindrical, produced forward to base of second tergite.

*Holotype*—♀, Macdiarmid, Ont., June 27, 1922, (N. K. Bigelow); No. 1869 in the Canadian National Collection, Ottawa.

This adds another genus in which the apical crossvein is absent to the list. The genus was not included in the table in Williston's Manual (1908) but traces out to *Gymnosoma* or *Cistogaster* from both of which it differs in lacking sternites to the terminal segments. The separation of *Gymnosoma* and *Cistogaster* in the same work is not satisfactory and on the character used some species trace to the wrong genus. The two genera are easily separated as the front femora of *Gymnosoma* bear short, sharp bristles on the apical third or half of the ventral edges while in *Cistogaster* these are absent.

## **Homalactia** Townsend

The characters of this genus have been beautifully illustrated by Walton (Proc. Ent. Soc. Wash., XVII, Pl. XIII, 1915). In the same paper Mr. Walton recognizes the genus *Exoristoides* Tns. and Aldrich and Webber (Proc. U.S.N.M., LXIII, Art. 17, p. 10, 1924) recognize the genera *Lypha* Desv. and *Exoristoides* Coq. *Homalactia harringtoni* Coq. was originally described in *Exoristoides*. As there is no existing comparison of these three genera, I present the following:

1. Facial ridges with bristly hairs on lower half in ♂, on lower fourth in ♀; frontal bristles in ♂ extending onto parafacials to or almost to the bristles on facial ridges; infra-squamal spinules absent; first vein bare *Lypha* Desv.
   Facial ridges with at most four bristles above vibrissae confined to lower fifth ..... 2
2. Infra-squamal spinules present; face not concave in profile *Exoristoides* Coq.
   Infra-squamal spinules absent; face concave in profile ....*Homalactia* Tns.

A comparison of the three genera shows that *Homalactia* is readily separated by the concave face, that wing venation is variable, being in some cases indentical in the three groups; that the only character distinguishing *Exoristoides* is the presence of infra-squamal spinules, longer face and less bristly facial ridges in the male. Further material may connect up the three genera or at least *Lypha* and *Exoristoides* which I consider only feebly differentiated.

All these genera possess a remarkably long pteropleural bristle, a character of considerable value in the present case, but nevertheless of dubious value in separating some other genera. In addition to specimens of *Homalactia harringtoni* I have before me a second species. The two forms may be separated as follows:

Abdomen black in ground color; no postocellars immediately behind the ocelli ..... *harringtoni* Coq.
Abdomen reddish in ground color; a pair of postocellars immediately behind

the ocelli of the same size and arrangement as the ocellars . . *brimleyi* n. sp.

### Homalactia brimleyi n. sp.

Length, 5 mm. *Male.* Black, the first two antennal segments, palpi, anterior four trochanters and abdomen, reddish; base of third antennal segment reddish. Head cinereous pollinose, the front with more yellowish pollen; frontal vitta much narrower than parafrontal, rusty brownish. Three orbital bristles, the upper two reclinate; front equal in width to greatest width of eye. Eyes with long, rather sparse, white hairs. Outer vertical bristles strong. Antennae considerably broadened at apex, as long as face.

Bristles of thorax only sub-erect; three pairs of presutural acrosticals and dorso-centrals, the posterior acrosticals close to suture; posterior sub-lateral and posthumeral bristle absent. Three posterior dorsocentrals; three sternopleurals; two very strong marginal scutellars, a weak basal and decussate apical pair.

Wings hyaline with blackish spots as follows: a fascia from the apex of the stigmal cell extending to somewhat behind the small crossvein; a broad cloud on the discal crossvein; a spot at base of third vein and greyish clouds at apex of auxilliary vein and on crossvein closing second basal cell. Bristles on veins as in *H. harringtoni* Coq.

First segment black beneath the scutellum, the second with an obscure median brown vitta. Bases of segments strongly yellowish white pollinose, the fasciae on third and fourth segments wider than that on second. Second and third segments with a single pair of strong discals, the second with a single pair of marginals, the third and fourth with marginal row, the fourth also with a complete row of discals. Lobes of fifth sternite brown.

Legs black, the trochanters reddish, the posterior pair largely brown, apices of coxae more or less reddish.

*Holotype*— ♂, Emo, Ont., June 7, 1924, collected by Mr. J. Brimley; No. 1868 in the Canadian National Collection.

The above description will fit the genotype except as indicated in the table for their separation.

### Homalactia harringtoni Coq.

Proc. U. S. N. M., XXV, 110, 1903, (Exoristoides).

The type was from Ottawa. There is a male from Emo, June 7, 1924, (J. Brimley), and a female, Aweme, Man., May 20, 1922, (N. Criddle). Coquillett describes the front of the female as one and one half times as wide as eye, but it is only slightly wider than the greatest width of eye.

### Peteina Meigen.

This genus has been recorded from America by Brauer and Bergenstamm, *P. stylata* being described by them from Greenland. It is closely related to *Wagneria* Desv. (*Metachaeta* Coq., *Phorichaeta* Rond.) and is distinguished by the short petiolate apical cell, or this cell may be very narrowly open. The American species trace out to *Phorichaeta* in Williston's Manual (1908) but differ in having pile on the median portion of the propleura. The three species in the genus may be distinguished as follows:

1. Apical cell not petiolate; second aristal segment elongate, the first short, oral margin not produced (Europe) ..... *erinaceus* Mg.

Apical cell petiolate ..... 2.

2. First two aristal segments very elongate; oral margin strongly produced ..... *stylata* B. B.

Both aristal segments short, face receding, oral margin but little prominent ..... *ontario* n. sp.

**Peteina ontario** n. sp.

Aeneous black, the head, thorax and broad bases of apical three abdominal segments greyish white pollinose.

Length, 7 to 7.5 mm. *Male*. Front three-fourths as wide as eye. Pollen of head greyish to yellowish grey; pale hair restricted to median lower part of back of head. Face moderately retreating, the oral margin and vibrisal angles prominent; parafacials not over one fifth as wide as median depression; bristles of parafacials strong, proclinate, a few short hairs between them, one or two strong bristles above vibrissae. Frontal vitta blackish, wider than parafrontal, slightly widened at both ends; four pairs of decussate frontals, the lower pair weak, an additional upper pair of very strong ones directed outwards; three pairs of moderately strong orbitals; ocellars fairly strong; verticals very strong, no second pair. Cheeks one third eye height, the hairs bristly. Third antennal segment very broad, hardly two and one half times as long as wide, the second segment not as long as width of third segment; arista thickened on basal half, the penultimate segment hardly twice as long as wide. Palpi brownish.

Pollen of thorax fairly thin, the dark vittae distinct in some lights, the outer ones broad. Two anterior acrosticals; three anterior dorsocentrals; post-humeral and posterior sub-lateral bristle absent: two posterior acrosticals; none immediately in front of scutellum; three posterior dorso-centrals; three pairs of marginal scutellars, only the second pair very strong, the apical pair decussate. Three sternopleurals; no pteropleural bristle but several hairs. Propleura with black hairs; no infra-squamal spinules.

Legs black; claws elongate, pulvilli moderately large, brownish tinged.

Wings lightly cinerous. Fourth vein angularly bent, strongly concave (on outer edge) the apical cell short to fairly long petiolate, the petiole never over one third as long as discal crossvein; third vein bristly to beyond crossvein; discal crossvein at apical third of penultimate section of fourth vein. Costal spine strong. Squamae white, halteres yellow.

About the basal third of the second to fourth abdominal segments pollinose, second and third segments with a single pair of strong discals, the fourth with two rows of discals, second and third with a single pair of very strong marginals, the fourth with a row of weaker marginals.

*Female*. Front slightly wider than in male, the orbital bristles much stronger. Third antennal segment narrower, two and three-fourths as long as the second; arista thickened on basal third. Otherwise similar. Genitalia simple.

*Holotype*— ♂, Macdiarmid, Lake Nipigon, Ont., July 4, 1923, (N. K. Bigelow); No. 1870 in the Canadian National Collection, Ottawa.

*Allotype*— ♀, same data.

*Paratypes*— ♂, same data; 2 ♀, Low Bush, Lake Abitibi, Aug. 6, 8, 1925, (Bigelow).

Dr. Aldrich (Ann. Ent. Soc. Am., XVIII, 120, 1925) has discussed the type of *stylata* B. B. *P. ontario* is much more like the genotype, *crinaceus* Mg.

## Gymnodexia bigelowi n. sp.

Black, the abdomen of male more or less broadly diffuse reddish laterally, the fourth segment almost all reddish; of female with only the fourth segment reddish; mesonotum yellowish-grey pollinose with three well-marked dark vittae. Length 11.5 to 13 mm.

*Male.* More than the anterior half of the cheeks and parafacials below. dark rusty reddish, the facial depression more yellowish. Head whitish pruinose, with slight yellowish tinge, but appearing silvery from most views. Front one third as wide as eye, narrowest at upper fifth, the frontal vitta wide, (twice as wide as parafrontal at narrowest part), brownish black, twice as wide anteriorly as above, the front strongly widening anteriorly. Frontal bristles not extending to base of antennae, weaker and sub-obsolete above; parafrontals with irregular row of fairly long black hairs; ocellar bristles strong; verticals strong, curved inwards apically; ocellar triangle over one and one half as long as wide. Black occipital bristles in at least two rows; occipital pile pale yellowish; cheeks with short black bristly hairs, their width equal to two-fifths the eye height; apical section of proboscis one seventh longer than head-height; palpi reddish or reddish brown, slender, slightly enlarged apically; antennae dull blackish, the first two segments sub-shining brown; rays of the black arista not longer than width of third antennal segment.

Thorax greyish pollinose; scutellum obscurely reddish on apical half or less. One pair of anterior acrosticals; normally only one (anterior) sub-lateral but often a smaller one in front; post-humeral usually absent, but sometimes weakly developed; four posterior dorsocentrals; sternopleurals 2:1 or 3:1. Scutellum with three pairs of strong marginals, the apical pair decussate; three or four pairs of fairly strong sub-marginals. Hair of thorax wholly black; rather abundant on median portion of propleura.

Legs black, the femora thinly grey pollinose. Claws elongate, brown, the elongate pulvilli greyish or greyish luteous.

Wings cinerous hyaline, the venation as in fig. 14 of Williston's "Manual" (1908). Squamae white. Halteres yellow.

Abdomen with slender median vitta and apices of segments, bare, elsewhere greyish white pollinose, sub-tessellate; fourth segment with basal black triangle. First segment without marginals the second with a single strong pair, the third and fourth with complete row; no discals; sternites hidden, the fifth reddish with the lobes largely brown. Genitalia brown, the basal segments reddish.

*Female.* Front five sixths as wide as eye; frontal vitta wider than parafrontal; two pairs of strong orbitals; claws and pulvilli shorter.

*Holotype*—♂, Robinson, Delaware Co., Iowa, July 24, 1924, (N. K. Bigelow); No. 1793 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data.

*Paratypes*—3♂, 1♀, same data; 1♀, Pt. Pelee, Ont., July 14, 1925, (G. S. Walley).

**Billaea nipigonensis** n. sp.

Black, the soft part of the cheeks and middle of face dark rusty reddish, the face somewhat paler; greyish pollinose. Length, 10 mm.

*Male.* Front two-fifths as wide as one eye; frontal vitta brownish black, more than twice as wide as parafrontal opposite. Head silvery white (or silvery grey) pruinose. Lunule reddish brown; frontal bristles fairly strong, just reaching base of antennae and hardly reaching to ocelli; two irregular rows of black hairs on each parafrontal; ocellars strong, proclinate; verticals strong, not convergent; outer verticals absent. Occiput with at least two rows of black bristly hairs along the eyes, the pile yellowish; cheeks black haired, the hairs extending well onto the occiput so that there is no pale beard visible; parafacials two-thirds as wide as median depression, not hairy; facial carina well developed, obsolete on lower third. Palpi bright reddish, antennae brown, reaching two-thirds the distance to the oral margin; aristal rays scattered above, not over two-thirds as long as width of third antennal segment.

Two anterior sub-laterals, the front one half as strong as the other; post-humeral strong; two or three pairs of anterior acrosticals; four posterior dorsocentrals, sternopleurals 1:1. Scutellum with two pairs of strong lateral marginals, a slightly weaker, decussate apical pair and two pairs of much weaker sub-marginals. Hair of pleura wholly black, the propleural hair rather abundant.

Legs wholly black, the femora greyish pollinose in some views. Pulvilli small, fuscous with silvery margins.

Wings lightly cinereous, the fourth vein with short appendage at the bend, the apical crossvein almost straight. Squamae white, halteres dull orange.

Abdominal segments broadly shining apically except on the broad middle dorsally and towards the middle of the venter. First segment without strong bristles, second with marginal pair, the third and fourth with marginal rows; no discals. Sternites hidden; fifth sternite brownish, the lobes as long as the basal section, their inner edges parallel on basal half, thence gently diverging.

*Holotype*— ♂, Macdiarmid, Lake Nipigon, Ont., July 13, 1922, (N. K. Bigelow); No. 1794 in the Canadian National Collection, Ottawa.

*Paratype*— ♂, Macdiarmid, June 25, 1922, (Bigelow); in Royal Ontario Museum of Zoology.

The genus *Billaea* is possibly not separable from *Myocera* but I have used the name in order to better indicate the relationship of the species.

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## SOME NEW COLEOPTERA

BY J. B. WALLIS,

Department of Zoology, University of Manitoba.

There could be no more fitting introduction to this paper than an expression of appreciation of the work done by Dr. H. C. Fall of Tyngsboro, Massachusetts, in the study of our North American Coleoptera. It is his remarkable ability to select and to point out the salient characters of species in difficult groups as displayed in his revision of the genera *Coelambus* and *Agabus* in *Dytiscidae* and of *Gyrinus* in *Gyrinidae* that makes possible the description of five out of six of the following beetles.

In reference to the measurements given below, it should be noted that a

micrometer scale in the eye piece of a binocular microscope was used, the magnification varying from x 17 to x 49 with the size of the insect or part measured. The measurements may therefore be considered as exact with but a very small allowance for probable error.

**Coelambus acaroides** race **winnipeg** new race.

*Shape*: Rotundate oval as in *acaroides*.

*Head*: Shining reddish-yellow, pale, with a large oval or oblong rufo-piceous spot adjacent to each eye; uniformly and moderately punctate; antennae pale at base, outer joints darker. Clypeus very finely margined.

*Thorax*: Dark rufo-piceous, slightly paler towards sides; moderately, evenly and rather closely punctate, shining between punctures.

*Elytra*: Pale testaceous, with dark markings as in *acaroides*, very evenly and uniformly punctate with rather large shallow punctures separated by about or somewhat less than their own diameters; the whole surface, including the punctures, covered with a very minute reticulation; the sub-marginal carina distinct and nearly attaining the base.

*Under side*: Of head and thorax pale; epipleura pale but usually infuscate; abdominal apex pale, tibiae pale, fore and middle tarsi always, hind tarsi usually, darker; femora pale, the hind and sometimes the others clouded with darker, metasternum and the coxal plates very coarsely and the latter closely punctate; epimera, epipleura and abdomen very densely and minutely punctulate, the epipleura and the first two abdominal segments at the sides with a few large, shallow scattered punctures. ♂ fore and middle tarsi moderately dilated, the first fore-tarsal joint widest.

*Size*: Type, 2.38 mm. long, 1.56 wide.

*Type*: ♂ Winnipeg, Manitoba, 10, vii, 24, in my collection.

*Paratypes*: 9 ♂ ♂'s Winnipeg, 5-17, vii, 24, 1 ♂ Thornhill, Manitoba. 14, vii, 24, 2 ♂ ♂'s Stonewall, Manitoba, 20, vii, 25. 6 ♀ ♀'s Winnipeg, 3-10, vii, 24; 1 ♀ Thornhill, Manitoba. 14, vii, 24, 1 ♀ Stonewall, 20, vii, 25; 1 ♀ Thornhill, 27, vii, 25. Some of these No. 1969 in the Canadian National Collection.

This interesting race appears to be worthy of a name, as the 22 specimens before me show little variation, what there is being a tendency towards a lighter color beneath—possibly due to immaturity—and a finer, less even punctation of the thorax. Apparently this race may be known from typical *acaroides* by the dark markings on the head—always present though occasionally faint—the infuscate antennae, and the dark thorax.

In addition to the two porrect spines mentioned by Dr. Fall (N. A. species of Coelambus, 1919, page 5) there are, in *acaroides* and in *winnipeg*, caudad and external to them, two minute, erect denticles.

*Acaroides* is not known from Manitoba.

**Agabus pseudoconfertus** sp. nov.

*Holotype*: ♂ ; oblong-oval, the sides slightly more parallel than in *confertus* Lec., the point of maximum width at or a trifle behind the middle of the elytra. Black. Labrum, two posterior spots on head, the lateral margins of thorax and the posterior portion of the lateral elytral margin, reddish. No yellow spots on elytra. Antennae, palpi, and legs rufous, the femora in great

part piceous, and the hind tibiae darker rufous. Reticulation of thorax and elytra slightly more pronounced than in *confertus*. The secondary minute micro-reticulate sculpture present on the elytra but not on the thorax and the three series of coarser punctures on the elytra are also a little more evident than in *confertus*. Minute punctules a little coarser than in *confertus*, within the thoracic meshes, but both within the reticulation and on the reticulating lines of the elytra. Prosternum angularly convex in cross section, the process somewhat deflexed with the metasternal sulcus rudimentary and not continued backward on to the plane of the metasternum, (very slightly so in *confertus*). The pro- and mesotarsi are a little more strongly incrassate than in *confertus*, the claws a little stouter with the anterior one less sinuate than in that species. The posterior claw is evidently though slightly longer than the anterior. A few punctures on the inner margin of posterior tibiae.

The coxal plates approach the meso-coxae more closely than in *confertus*. In the holotype the relative width of the coxal plate to the metasternal wing is very close to as 1.48 mm. is to 6 mm. while in *confertus* the metasternal wing is a little more than half the width of the coxal plate. The posterior abdominal segment is rather widely flattened in the middle and this space is reticulate. Exteriorly at the apical end of the segment are a few longitudinal strigosities, the longest extending not more than half way to the base. In *confertus* these strigosities are longer, usually more pronounced and frequently converging with the enclosed space not or feebly flattened, and smaller.

*Allotype*—♀, as in the ♂ with the exception of the sexual characters.

*Morphotype*—♀. Shape as in holotype but slightly smaller. Head with not very evident secondary micro-reticulation. Micro-reticulation distinct on the thorax causing the lustre to become somewhat sericeous.

Reticulation of basal two thirds of elytra longitudinal and fine and dense, approaching the normal for the species only as it nears the posterior end. The secondary system of micro-reticulation is so fine and dense that it gives a distinctly sericeous appearance to the elytra, particularly in the anterior two thirds. The minute punctules are discernible anteriorly only with difficulty. Beneath less shining than in holo-or allotype, otherwise the same.

*Holotype*—♂, Winnipeg, Man., 11, VI, 24 (Wallis); in my collection.

*Allotype*—♀, Mile 17, Hudson's Bay Ry., 2, VII, 17 (Wallis); in my collection.

*Morphotype*—♀, Winnipeg, Man., 10, IV, 25, (L. H. Roberts); in my collection.

*Paratypes*—1 ♂, Winnipeg, 12, IV, 25; 2 ♀, Winnipeg, 10, IV, 25 (Roberts & Wallis).

The average length and width for the species seems to be about 8 mm. x 4 mm. This species is very close to *confertus* to which it would run in Dr. Fall's key, (A Review of the North American species of Agabus, H. C. Fall, 1922) and the absence of the elytral spot in the six specimens known, though this spot seems always present in *confertus*, would perhaps be poor evidence of a species. The even more rudimentary metasternal sulcus, the slight differences in sculpture, ♂ tarsi and claws, but particularly the evidently much narrower

metasternal wings in proportion to the coxal plates and the difference in sculpture of the posterior abdominal segment give a combination of characters sufficient to differentiate it from Leconte's species.

The dimorphism in the ♀ is remarkable.

Four of the six specimens at hand were taken in a ditch of water running to the Assiniboine River. This ditch simply carries off the water from the melting snow and soon dries up. *Pseudoconfertus* should be looked for, therefore, in spring, in ditches or rivulets having connection with a river.

### Agabus palustris sp. nov.

Length 6.09 mm., width 3.20 mm. Oblong-oval, the sides almost parallel.

Black. Labrum, base of head, antennae, reflexed edges of elytra and thorax, palpi and legs reddish, femora scarcely darker, under side black.

Head and thorax obviously reticulate, the meshes larger on the latter. Secondary system of micro-sculpture detectable under high power on head and at sides of thorax, disk of thorax shining, minute punctules observable only at sides of thorax.

Elytral reticulation moderate, smaller and less impressed than in *strigulosus* but much as in *confertus*, the micro-sculpture evident throughout, the minute punctules plentiful, occurring chiefly on the reticulating lines, the two discal series of coarse punctures evident, the submarginal less so especially anteriorly.

Prosternum angularly convex in cross section, somewhat deflexed. The metasternal sulcus is rudimentary, not extending on to the plane of the mestasternum, though fairly deep and wide between the coxae.

The pro- and mesotarsi are quite narrowly dilated, the proportion of the first to the fourth pro-tarsal joint being only about 3½ : 2½. There are no obvious palettes on the rather sparse glandular hairs. The protarsal claws are small and but little sinuate, the posterior one a little the more so.

In the type there are two large punctures about the middle of the hind tibiae. These are probably variable.

The last ventral segment is somewhat flattened medially, with a few short strigosities externally.

Metasternal wing about one-third the width of the coxal plate, the proportion being nearly .37 mm. : 1.05 mm.

*Type*— ♂, Onah, Manitoba, 13, vii, 18, taken by myself in a marshy stream running out of Douglas Lake. In my collection.

This little species, unfortunately represented by a unique, is quite clearly different from any of our recognized species. The two peculiarly placed punctures of the hind tibiae make its position in Fall's table (A Review of the North American species of Agabus, 1922, p. 6) uncertain. If, as appears possible, specimens are found having no punctures on the inner side of the posterior tibiae, they will then run to couplet 19 in Dr. Fall's paper. The species is not likely to be mistaken for *strigulosus* however, though about the same size, the entirely different type of pro-tarsal pads and even more particularly the characters of the prosternal process and metasternal sulcus immediately forbidding such reference. On the other hand, if it be considered as falling under Dr. Fall's section 33, it would then run directly to *confertus*. Indeed it is very much like

a small *confertus* Lec. or *pseudoconfertus* Wallis, and from its prosternal, abdominal and sculptural characters should probably be put next them. The metasternal sulcus is, however, proportionately wider than in those species as the coxae are less approximate. The tarsi are less dilated, the protarsal claws proportionally weaker even than in *confertus* and the rugosities of the last ventral much less pronounced even than in *pseudoconfertus*, though of the same type; and the relative widths of the metasternal wing and coxal plate different from either. It is, of course, very much smaller.

**Gyrinus hatchi** sp. nov.

Form rather broad and not very convex, black with some bluish reflections, bronzed, quite brilliantly so on clypeus, and on the thoracic and elytral sides. Elytral surface moderately polished and with a fine alutaceous sculpture visible most clearly posteriorly and laterally, obviously micro-punctulate. Side margins of thorax and elytra moderate, about intermediate between the *ventralis* and the *aeneolus* groups; strial punctures moderate, stronger laterally. Eleventh stria distinct but not very distant from margin, somewhat nearer than in *ventralis* and considerably nearer than in *marginellus*. Beneath, including hypomera and epipleura, rufo-testaceous, the middle and hind legs slightly lighter.

*Male genitalia.* Testaceous, middle lobe broad, between one-half and two-thirds as wide again as lateral lobes, scarcely noticeably widened apically, tip bi-subtruncate, very broadly angulate, upper surface flatly carinate, the carina becoming obsolete some distance from tip which is flat.

Length 4.69 mm. width 2.51 mm.

*Holotype* ♂. Crooked Lake, Washtenaw Co., Michigan, 18 iv, 20, bearing the serial number 655 k. Collected by Mr. Melville H. Hatch in whose honor the species is named. Type at present in my collection.

This species would appear to fall between couplets 6 and 7 in Dr. H. C. Fall's table (The North American Species of Gyrinus, 1922. Transactions of the American Entomological Society, XLVII, P. 276), its size forbidding reference to 6, and its relatively wider lateral margins to 7. It may be distinguished from *ventralis* by its smaller size, more obvious micro-punctulation, and the genitalic characters; from *fraternus* by the size and the genitalia; from *marginellus* by the distinctly bronzed, punctulate, and alutaceous elytra, the closer approximation of the eleventh stria to the margin, the paler color beneath, and the genitalia; from *aeneolus* by the difference in elytral sculpture and the genitalia; from *woodruffi* by the genitalia as well as minor characters.

**Gyrinus dubius** sp. nov.

*Holotype.* ♂, Rather broadly oval, not very convex, black with sides moderately bronzed, bluish reflections not very noticeable, moderately polished very finely alutaceous most evident laterally and posteriorly, distinctly and fairly densely micro-punctulate.

Strial punctures fine, not much coarser externally, outer row close to but distinct from margin.

*Under side.* Hypomera, epipleura and mesosternum reddish brown, the latter darkest; metasternum and abdomen black with a reddish tinge; fore and

middle legs and hind femora almost concolorous with mesosternum, hind tibiae and tarsi lighter.

*Male Genitalia.* The outer lobe piceous brown, the median lobe rufo-testaceous, darker along the median carina, especially where it broadens near tip, the color there being piceous brown. The median lobe resembles the median lobe in *picipes* to some extent. It is strongly roofshaped, its sides converging apically for about two-thirds of its length, when a slight constriction is visible, it then again converges evenly to the tip which is almost exactly one-third the greatest width of a lateral lobe. The superior edge of the median lobe is narrowly flat for about half its length, it then becomes rounded for a very short distance, but about one-third from the tip it flattens and expands into a parallel sided ridge about one-third the width of a lateral lobe. The extreme tip of the median lobe is very slightly upturned and prominent. Length 4.94 mm., width 2.70 mm.

The *holotype* is a male taken at St. Anthony, Newfoundland, and is No. 1970 in the Canadian National Collection.

A *paratype* ♂ from the same locality remains in my collection through the kindness of Mr. Gibson, Dominion Entomologist.

With these specimens I associate somewhat doubtfully three females from the type locality. They are rather larger, more bronzed especially along the suture and in the strial punctures, the latter being bluish in the holotype, and more decidedly alutaceous; otherwise they match the males.

This species is very close to *picipes*, but appears to be obviously more alutaceous and micro-punctulate above, with the outer strial punctures less evidently larger than those near the suture. Before the color is more reddish and the legs are darker. Superficially the genitalia are much alike, but apparently the color of the apical portion of the median lobe together with the peculiarities noted above will be sufficient to separate them. To this, however, may be added that the depth in a vertical plane of the tip of the middle lobe of the ♂ genitalia of *dubius* is considerably more than in the case of *picipes*.

### **Oberea brooksi** sp. nov.

Length 12.74 mm., width immediately behind humeri 2.73.

Black above and below excepting the clypeus which is yellowish brown, the tarsal claws, reddish, and the palpi tinged with reddish.

Antennae beneath especially basal joints, the head, thorax, elytra and underside, moderately thickly clad with ash-grey vestiture, obscuring the ground color except under fairly high magnification. Erect hairs short, rather sparse and pale except posteriorly where they are darker.

Head rather coarsely punctate, the punctures separated as a rule by less than their own diameter, the lines between the antennal bases less punctate and more shining. A secondary system of minute punctules occupies the interstices among the coarse punctures. Antennae longer than elytra.

Thorax coarsely and evenly punctate on disk and flanks, the punctation becoming crowded anteriorly and basally. A secondary system of minute punctules evident. A shining anterior submarginal groove almost encircles the thorax, and a similarly shining basal submarginal groove terminates near the lateral extension of the coxae. The two moderate sized callosities are, under high magni-

fication, seen to be very finely micro-alutaceous. There is an irregularly narrow, shining, slightly elevated area on the middle line from between the callosities to near the base, where it disappears in a sudden depression which basally becomes transversely rugose. The thorax is slightly constricted midway between the callosities and the anterior margin, and again near the posterior margin. Length of thorax 1.97 mm., width 2.17 mm.

*Elytra.* Length 9.45 mm. feebly inflated apically. Coarsely and deeply punctate in series, the rows somewhat confused apically; the punctures subquadrate basally, rounded apically, the secondary system of punctures less evident than on the head and thorax as the hairs of the elytral vestiture are coarser on the elytra than elsewhere; vaguely bi-costate in about basal half; the apices obliquely truncate, scarcely sinuate, the sutural denticle small but distinct, the exterior obsolescent.

Under side rather densely granulate-punctate with irregularly arranged and somewhat scattered larger punctures, coarser at sides than on middle of abdomen, all distinctly smaller as a rule than those on upper side. Last segment of abdomen (♀) truncate and feebly emarginate, triangularly impressed for a little over half its length, a median line evident in basal portion.

*Type.* ♀, Transcona, Manitoba, 10, vii, 24. In my collection.

*Paratype.* ♀, Transcona, Manitoba, 10, vii, 24. In collection of Mr. G. S. Brooks, who took both specimens and to whose generosity I am indebted for the type.

*O. brooksi* does not fit in anywhere very well in Casey's table (Mem. on the Col. iv, 1913, p. 364) but may be placed as a fourth subsection under section 9.

This fine species was taken by Mr. Brooks when sweeping low willows at night. Unfortunately there is no certainty as to what the specimens were swept from as numerous herbaceous plants were among the willows and were swept at the same time. Mr. Brooks and I made a conscientious attempt to secure more this season but without success.

It is a pleasure to dedicate the species to Mr. Brooks as a slight recognition of his enthusiasm and careful collecting.

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## SOME NEW APHIDS FROM BRITISH COLUMBIA.

BY R. GLENDENNING,

Dominion Entomological Laboratory, Agassiz. B. C.

During five years collecting in this family several species have been met with which it has been impossible to identify with any published description.

Five of these species were recently submitted to Dr. A. C. Baker and in the opinion of Dr. Baker, and Mr. Mason who kindly examined them, were undescribed.

One species belonging to the *Callipterini* was thought worthy of having a new genus erected for it and on the authority of the above mentioned specialists I have erected the genus *Betulaphis* for *B. occidentalis.* Two new species are described for *Euceraphis*, one for *Macrosiphum*, and one for *Amphorophora.*

All measurements are from alcoholic preserved material mounted in balsam for some years.

Tribe CALLIPTERINI

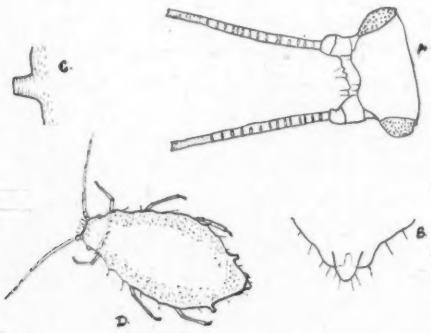
## **Betulaphis** n. gen.

Cornicles present, truncate, antennae on barely evident tubercles of six segments without setae, sensoria narrowly oval extending half way round the circumference. Body with a few simple hairs which are capitate in the apterae and pupae, wings clear, venation normal. Cauda bluntly conical. Anal plate divided into two lobes by a U shaped cleft.

Type. *Betulaphis occidentalis* n. sp.

## **Betulaphis occidentalis** n. sp.

*Alate viviparous female*—General color pale green tinged with buff, distal extremity of tibia, tarsi and antennae, dusky. Antennae shorter than the body, with 14-15 elongate oval sensoria in a single row confined to the basal




Betulaphis occidentalis

A. Head and antennal segments I, II, & III. Alate viviparous female. B. Cauda and anal plate. Alate viviparous female. C. Cornicle. Alate viviparous female. D. Apterous viviparous female.

4/5th of the length. Segments IV, V, and VI of antennae without secondary sensoria, V with one circular fringed sensorium just below the apex, VI also with an oval fringed sensorium at the junction of the base and unguis.

*Antennal measurements*

| | A | B | C |
|---|---|---|---|
| III | 0.44mm | 0.5mm | 0.52mm |
| IV | 0.26 | 0.26 | 0.24 |
| V | 0.2 | 0.18 | 0.2 |
| VI | 0.08+0.08 | 0.07+0.07 | 0.08+0.08 |

Cornicles sub-cylindrical, shorter than the cauda, without flanges. Cauda broadly conical, blunt with a few hairs. Anal plate broader than long, not extending as far as the tip of the cauda, with several prominent hairs. Length of body 1.6mm. Length of wing 2.8mm.

*Apterous viviparous female*—General color pale green without the buff of the alatae. Antennae rather more than one half as long as the body, of six

segments, without sensoria or hairs. Front of head and anal plate with several stout capitate hairs, a few shorter ones on the body.

Cauda broadly conical. Anal plate rounded, entire, almost truncate. Cornicles from a broad base, tapering, flanged, width at base equal to length.

Described from several cotypes. Slide in the Canadian National Collection at Ottawa.

A delicate little species found in colonies on the underside of the leaves of *Betula occidentalis* Hook. at Chilliwack, B. C. in April.

### **Amphorophora arnicae** n. sp.

General color green, head and thorax blackish, abdomen green with black lateral areas, antennae, cornicles and legs dusky, basal half of femur paler. Antennae slightly shorter or longer than the body, with a few non-capitate hairs, one half the diameter of III in length. Sensoria 35-45 confined to III but scattered over the entire surface of that segment.

*Antennal measurements*

| | A | B | C |
|---|---|---|---|
| III | 0.82mm | 0.7mm | 0.85mm |
| IV | 0.6 | 0.5 | 0.56 |
| V | 0.5 | 0.48 | 0.54 |
| VI | 0.14+1.0 | 0.14+1.04 | ? |

Cornicles subequal to III in length, base and greatest diameter of dilation equal. Reticulated on distal 1/8th and imbricated basally for an equal distance. Cauda long 1/3rd length of cornicle, somewhat constricted in the middle.

Described from several cotypes now in the Canadian National Collection at Ottawa.

Collected on *Arnica amplexicaulis* Nutt. in the Hudsonian zone on Mt. Cheam, Agassiz. B. C. in August.

### **Euceraphis sitchensis** n. sp.

*Alate viviparous female*—General color green, head with longitudinal black line and thorax with three longitudinal black lines, abdomen with three transverse black lines and sometimes a partial fourth. Antennae black, cornicles green, stout slightly flared at tip. Beak not reaching third coxae. Legs dusky with tarsus and apical 1/3rd of tibia black; black portion of tibia rather heavily beset with stout hairs. Cauda stout, knobbed and fringed with prominent hairs. Anal plate prominent, somewhat truncate.

*Antennal measurements*

| | A | B | C |
|---|---|---|---|
| III | 1.7mm | 1.4mm | 1.6mm |
| IV | 0.84 | 0.75 | 0.96 |
| V | 0.74 | 0.64 | 0.8 |
| VI | 0.27+0.15 | 0.21+0.12 | 0.3+0.14 |

Sensoria on III, 15-18, confined to an irregular row on rather less than the basal half. Width of head across eyes 0.64mm, hind tarsus 0.2mm. Length of body 3.5 to 4.0mm.

Wings with venation normal, dusky patches at junction of veins and margin quite prominent. Length of wing 6.0mm.

Described from several cotypes now in the Canadian National Collection at Ottawa.

Found on the underside of the leaves of the mountain alder *Alnus sitchensis* Sarg at Harrison Lake, B. C., in May.

### Euceraphis variabilis n. sp.

*Alate viviparous female*—General color of body pale green. In some individuals a patch of black on dorsal and ventral surfaces of thorax, some individuals are without this black. Head and abdomen darker green than thorax. Cornicles truncate, ringed with black, beak tipped with black barely reaching to second coxae. Legs green with tarsus and apical 1/3rd of tibia dusky. Cauda and anal plate not prominent, the former knobbed. Antennae approximately as long as the body, dusky except segments I and II and basal 2/3rd of III.

*Antennal measurements*

| | A | B | C |
|---|---|---|---|
| III | 1.4mm | 1.45mm | 1.6mm |
| IV | 0.86 | 0.9 | 0.86 |
| V | 0.74 | 0.72 | 0.66 |
| VI | 0.3+0.1 | 0.25+0.15 | 0.29+0.18 |

Sensoria on III, 17-23 confined to rather less than basal half in a somewhat irregular row. Usual ones on V and VI.

Width of head across eyes .66 mm, length of body 4.0mm, hind tarsus 0.2mm, wing 6.2mm.

Described from several cotypes now in the Canadian National Collection at Ottawa.

Alatae and pupae found on the underside of the leaves of *Sambucus racemosa* L at Agassiz. B. C., in April.

### Macrosiphum caricis n. sp.

*Alate viviparous female*—General color green, antennae, legs and cornicles dusky. Antennae half as long again as the body, antennal tubercles more prominent on the inner faces.

III with 12-15 circular sensoria in a row, confined to the basal ¾ of the segment. IV, V, and VI without secondary sensoria.

*Antennal measurements*

| | A | B | C |
|---|---|---|---|
| III | 0.84mm | 0.68mm | 0.72mm |
| IV | 0.74 | 0.6 | 0.64 |
| V | 0.67 | 0.44 | 0.58 |
| VI | 0.3+1.02 | 0.12+0.8 | 0.24+1.06 |

Cornicles slightly shorter than III, moderately slender sub-cylindrical from a slightly broader base, apical 1/8th constricted and reticulated, imbricated over the entire remainder. Cauda 0.3mm long, ensiform, approximately one half the length of III, with a few hairs, extending as far as the tip of the cornicles.

Described from three cotypes now in the Canadian National Collection at Ottawa.

Found on a species of *Carex* in the Hudsonian zone on Mt. Cheam, Agassiz, B. C. in August.

# THE GENUS TRICHOTANYPUS KIEFFER (CHIRONOMIDAE, DIPT).

BY O. A. JOHANNSEN,
Ithaca, N.Y.

Kieffer defined this genus in 1906 (Ann. Soc. Scient. Bruxelles. Vol. 30) without assigning any species to it. Later in the same year (Genera Insectorum, Fasc. 42) he designated *Tanypus posticalis* Lundbeck as the type, further stating that the genus differed from *Tanypus* (Johannsen, 1905; *Protenthes*, 1907) in lacking the bifurcation at the tip of the third vein ($R_5$). In a key published in 1918 (Entomologische Mitteilungen 7:102) Kieffer restricts the name *Trichotanypus* to those species which have hairy wings; the petiole of the cubitus, measured from the m-cu crossvein, nearly as long as the posterior branch; the antenna of the female with 13 or at most 14 segments; the terminal segment of the hypopygium of the male bilobed or sagittate. *Protenthes* Joh. with which it is compared, is defined by him as having the petiole of the cubitus less than 1/3 as long as the posterior branch; the antennae of the female 15 segmented; and the clasper of the male simple, long, and tapering.

The diagnostic characters given indicate that the forms listed under *Trichotanypus* as restricted by Kieffer in 1918 are much more closely related to those included in *Protenthes* than the members of either group are to *T. posticalis* Lundb., the type of *Trichotanypus*. The venation as well as the form of the hypopygium exhibit gradations which render generic division on these characters, especially as correlated by Kieffer, of doubtful value. If the two genera are to be maintained, only species possessing the structural characters of *T. posticalis* should be placed in *Trichotanypus*, while *culiciformis, claripennis, choreus, vestitipennis*, and the like, should be transferred to *Protenthes*.

The characters of the genus *Trichotanypus* as thus restricted are as follows: Wing hairy, the radius with but two branches, the short, apically placed $R_2$ absent, the m-cu crossvein placed far proximad of the r-m crossvein, the cubitus forks at or but slightly distad of the base of the radial sector. Should a division of *Protenthes* in the older sense, as indicated above, be desirable, it must be made on lines other than the position of the fork of the cubitus.

I propose the name *persimilis* for specimens from New York State which were erroneously determined in 1908 as *Trichotanypus posticalis*. I have recently had the opportunity to compare my specimens with the type in the University Museum in Copenhagen and found that in the Greenland species the cubitus forks nearly under the base of the radial sector and that the apex of the posterior branch of the cubitus is not flexed.

## **Trichotanypus persimilis** n. sp.

*Male.* Head blackish brown, subshining; antennae over three times as long as the width of the head, basal segments large, each measuring nearly 1/3 the transverse diameter of the head and nearly contiguous; the first flagellar segment almost twice as long as broad, the second, third and fourth but little longer than broad, the others gradually increasing in length to the thirteenth which is about three times as long as the second, the fourteenth is a third longer than the preceding, the fifteenth, conical and only 1/3 as long as the fourteenth. The palpi are brown, each about 3/4 as long as the vertical diameter of the eye, the first segment, (not counting the palpifer or basal articulation) about as long as

broad, the second twice the first in length, the third and fourth subequal and ¾ as long as the second. Eyes bare and moderately emarginate, separated at the vertex by 2/3 the width of the head in fresh specimens.

The mesonotum, scutellum and metanotum blackish brown, subshining, dorsum slightly pollinose with indications of three rather slender stripes, due mainly to the lack of pollen upon them; median stripes not extending over the depressed area in front of the scutellum; hairs sparse and yellowish brown. The pleura and abdomen dark brown, though lighter than the mesonotum; hairs yellowish brown.

Abdomen slender; the hypopygium but slightly wider than the last segment, the apical segments slender, slightly curved, tapering and with a slender cigar-shaped stylet at the apex nearly 1/5 as long as the segment; basal pieces of the hypopygium robust, curved, each with a stout pointed lobe projecting mesad and cephalad, provided with a number of strong setae on the mesal margin. The lobe is about half as long and distinctly broader than the clasper.

Wings grayish hyaline, veins pale brown, hairs not densely though rather uniformly distributed over the wing surface; venation closely resembling Lundbecks figure of *T. posticalis* (Plate 6, fig. 20), differing in having the costa produced to the extreme apex of the wing; the media ends as far behind the apex of the wing as the radial sector does in front of it; the cubitus forks more than the length of the r-m crossvein distad of the latter; the posterior branch of the cubitus slightly flexed at the tip. Halteres brown, base of the peduncle yellow. Length 2 mm.

*Female.* Somewhat shorter than the male, in coloring similar. Antennae about twice as long as the horizontal diameter of the head, 14 segmented, the terminal segment enlarged and nearly twice as long as the preceding; basal segments distinctly smaller than in the male, separated from each other by a distance nearly equal to their diameter. Palpi as with the male. Wing a little broader than in the male; costa produced very slightly beyond the tip of the wing; the m-cu crossvein is erect instead of slightly oblique; measured parallel to the longitudinal axis of the wing the distance from the humeral crossvein to the m-cu crossvein is to the distance from the m-cu crossvein to the r-m crossvein as 19:14.

Specimens collected under a tent trap on the margin of a brook at McLean, N.Y. by Professor P. W. Claassen, April 29th. Male holotype and allotype mounted on slides. Male paratype on pin collected at Ithaca, N.Y. In the Cornell University Collection.

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## TWO NEW GEOMETERS FROM BRITISH COLUMBIA.

BY E. H. BLACKMORE,
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LARENTIINAE.

### **Dysstroma colvillei** sp. nov.

Palpi short, porrect, brown and cream scales mixed. Antennae dotted brown and cream alternately on upper side, underneath finely ciliated. Front, vertex and thorax speckled with brown and cream scales. Abdomen the same, with a black band at the posterior end of each segment, broader at the middle and

tapering on each side. Primaries, fawn color with a heavy blackish brown median band; two black basal bands, the outer one geminate, the space between filled with white, these bands are acutely angled outwardly between sub-costal and median veins; the space between extra basal and intra-discal lines is pale brown with a dark reddish-brown bar extending from a little above the median vein to the inner margin; the intra-discal is a slightly wavy, inwardly oblique line to median vein, then outwardly oblique to a point just above vein 1 and then proceeding obliquely inward to inner margin; the extra-discal is an irregularly scalloped line running straight from costa to sub-costal vein, then slightly rounded to vein 6, between this latter and vein 3 it is produced into a large rounded tooth followed by a smaller one between vein 3 and vein 2, from this latter to the inner margin is a series of three smaller scallops; midway between the extra-discal and the outer margin is an irregular rust-colored band extending from costa to vein 4, (in some specimens it is more or less distinct to inner margin); there are three or four intervenular black dashes, the largest being just below the apex; terminal line dark brown. Fringes pale with a darker median band. Discal mark black, linear. Hind wings whitish with small discal dot and extra-discal line faintly reflected from underneath. Terminal line dark brown. Fringes white. Beneath, deep cream color, space on primaries between extra-discal and base very dark; on secondaries a pronounced extra-discal line with round discal dot. Alar expanse 27-29 m. m.

Described from seven ♀ ♀ all taken on Vancouver Island.

*Holotype*—♀, Saanichton, B. C., July 4th, 1922, (J. G. Colville); No. 2069 in the Canadian National Collection at Ottawa.

*Paratypes*—5 ♀ ♀ same locality and collector, June 26th to July 10th, in collection of author; 1 ♀ Quamichan Lake, near Duncan, B. C., June 22nd, 1923, (A. W. Hanham), in coll. Hanham.

This new species belongs to the *hersiliata-occidentata* group. It differs from *occidentata* Taylor in the ground color being fawn-brown instead of creamy-white; in the dark red-brown basal bar instead of orange; in the absence of the white crenulate s.t. line; in the wider median band and also in the shape of the extra-discal line which is much less deeply scalloped and lacks the narrow deep indentation between veins 5 and 6 which is so noticeable in *occidentata* and its form *mutata*. As is usual in this genus the species is somewhat variable, the specimen from Quamichan Lake being the largest with the median band a trifle wider and heavier, but they are all readily recognizable and are quite distinct from *occidentata*, its nearest ally.

I take pleasure in naming this new species after the Hon. J. G. Colville, who has added many new records to our B. C. List of Lepidoptera.

GEOMETRINAE.

### **Enypia moillieti** sp. nov.

Palpi short, porrect, white with 3rd joint pale fuscous. Front and vertex white with a few scattered brown scales. Thorax brownish grey, hairy, intermixed with some long scales, the latter having their tips white. Abdomen shining white. Primaries, brownish-grey crossed by two scalloped dark brown lines; the median band between these two lines is a darker shade of the ground color; the intradiscal line is incurved from sub-costal to median vein and then again to vein 1;

the extra-discal line crenulate from costa to vein 6, then deeply incurved to vein 4, slightly inwardly oblique to vein 3, broadly incurved to vein 1 and then inwardly oblique to inner margin. Discal mark brown, linear. Fringes concolorous. Secondaries much paler with a few fine dark brown striae and an indistinct extra-discal line. Fringe pale with dark points at the end of the veins. No visible discal spot. Beneath whitish, a sub-terminal row of pale brown spots from costa to median vein on primaries and which is continued on hind wing parallelling outer margin. No discal spot. Alar expanse 33-35 m.m.

Described from 9 specimens, 7 ♂ ♂ and 2 ♀ ♀.

*Holotype*—♂ Vavenby, B. C., July 25th, 1921, (T. A. Moilliet); No. 2068 in the Canadian National Collection at Ottawa.

*Allotype*—♀ Chilcotin, B. C., August 2nd, 1921, (E. R. Buckell), in collection of author.

*Paratype*—4 ♂ ♂ Vavenby, B. C., July 25th to August 12th, 1921, (T. A. Moilliet); 1 ♂ Chilcotin, B. C., August 2nd, 1921, (E. R. Buckell); 1 ♂ Nicola Lake, B. C., July 18th, 1922, (E. R. Buckell); 1 ♀ Lillooet, B. C., August 14th, 1920, (A. W. Phair), in collection of author.

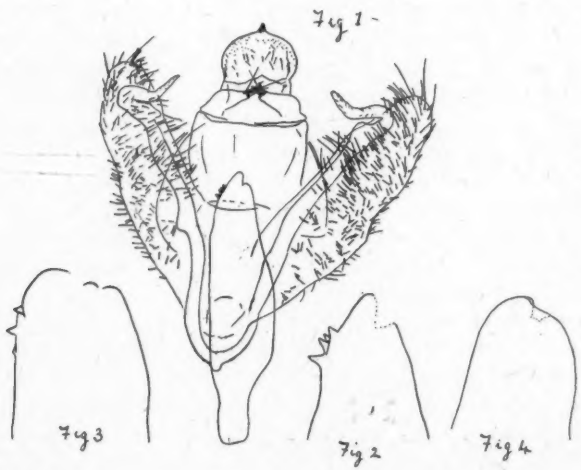


Fig. 1.—Male genitalia of *Enypia moillieti* Blackmore; Fig. 2.—Upper portion of aedoeagus of *E. moillieti* Blackmore showing cornuti; Fig. 3.—Ditto of *E. coolidgi* Cassino and Swett; Fig. 4.—Ditto of *E. packardata* Taylor; Figs. 2, 3 and 4 very much enlarged.

This new species is closely allied to *packardata* Taylor and *coolidgi* Cassino and Swett. In coloration it is similar to *coolidgi* but the cross lines are not so dark and clear cut so that it does not have such a contrasting appearance, *packardata* being a greyish white is distinct from both. The intra and extra-discal lines of *coolidgi* are much more finely scalloped than in the other two species which latter are practically alike in maculation. In size *moillieti* is larger than *coolidgi* and smaller than *packardata*, the average alar expanse of the three species being as follows:—*packardata* 38 m.m., *moillieti* 34 m.m., and *coolidgi* 26 m.m.

Through the kindness of Mr. S. E. Cassino who supplied me with a paratype and a slide of the male genitalia of *coolidgi*, I have been able to make genitalic

comparisons. While the genitalia of the three species are very similar in general outline, the armature of the aedoeagus is sufficient to show that they are all distinct. In *moillieti* the cornuti, 4 or 5 in number, are grouped together near the apex, in *coolidgi* there are several separate single teeth, placed one below the other, while in *packardata* they are entirely absent.

I am pleased to name this new species after Mr. T. A. Moilliet, whose persistent collecting in a little known district has added many new records to the Province.

I am indebted to Mr. Ira E. Cornwall for the camera lucida drawings of the genitalia which were made from slides prepared by the author.

## BOOK NOTICES

Applied Entomology—By H. T. Fernald; New Second Edition, McGraw-Hill Book Company, New York, Price $3.50.

This new edition of a standard text-book has been thoroughly revised by the author and an additional chapter on animals, not insects, with which an entomologist is frequently expected to deal, added; this chapter gives briefly the controls for earthworms, wood-lice, ticks, mites, etc. The fact that a second edition of this work has been published shows clearly its value to the student of applied entomology.

Revision of the North American Moths of the Subfamilies Laspeyresiinae and Oleuthreutinae—By C. Heinrich; Bulletin 132, United States National Museum.

This work is the continuation of the revision commenced by the author in Bulletin 123, U. S. National Museum (1923) on the large group of Tortricids comprising the family Oleuthreutidae or Eucosmidae. In Bulletin 123 the subfamily Eucosminae was dealt with and in the present bulletin the remaining two subfamilies are treated in the same comprehensive manner. Sixteen genera, thirty-four species and three varieties are described as new. Keys to the species are given and, what is far more important, figures are presented of both male and female genitalia, wherever possible. The author is to be congratulated on the completion of this important scientific contribution; to the student of Microlepidoptera it is indispensable and should smooth away the difficulties heretofore attendant on correct determinations of species belonging to this group.

Check List of the Diurnal Lepidoptera of Boreal America—By Wm. Barnes and F. H. Benjamin; Published in Bulletin Southern California Academy of Sciences, Volume XXV, Part 1, Los Angeles, Calif.

The present list follows more or less along the lines of the Barnes and McDunnough Check List of 1917, adding the numerous forms and varieties which have been described in the intervening nine years. There are not many changes in the specific synonymy, the most noticeable ones perhaps being the use of the names *ajax* Linn. for the Parsnip Swallowtail and *menippe* Hubner for the Monarch Butterfly, both these changes having been the subject of short articles in recent numbers of "The Canadian Entomologist." The 'Skippers' have been raised to superfamily rank under the title Hesperioidea and the recent revisional work of Lindsey and Skinner and Williams incorporated. It is in

the use of generic and family terms that the most radical changes have been made, due, as the authors frankly state, to a strict and impartial compliance with the rules regarding the fixation of genotypes as laid down in the "International Rules of Zoological Nomenclature" and in the 'Opinions' of the International Committee; the full data regarding most of these changes may be found in a paper by Barnes and Lindsey entitled "A Review of Some Generic Names in the Order Lepidoptera" published in the "Annals of the Entomological Society of America," XV, No. 1 (1922). Among the most startling ones may be mentioned the following:—*Ascia* Scop. for *Pieris* Schrank and the consequent change of family name to *Asciidae; Euidinae* to replace *Heliconiinae;* the Tentamen names, *Dryas* Hbn. for *Argynnis* Fabr., *Lemonias* Hbn. for *Melitaea* Fabr. and *Hamadryas* Hbn. for *Aglais* Dal.; the transference of *Lycaena* Fabr. from the 'blues' to the 'coppers' to replace *Heodes* Dal.; *Erynnis* Schr. to replace *Thanaos* Bdv. and the transfer of *Hesperia* Fabr. to replace *Pamphila* Fabr. necessitating a change in the subfamily name and the use of *Urbanus* Hbn. for the group formerly placed under *Hesperia.*

In justice to the authors it must be admitted that their line of reasoning is generally sound and the present list is undoubtedly a praiseworthy attempt to correct the carelessness of lepidopterists of the nineteenth century; to older workers in Lepidoptera the passing of such well-known names as *Pieris* and *Argynnis* and the change in conception of *Lycaena* and *Hesperia* must occasion a certain amount of sadness, if not, indeed, irritation.

In conclusion it might be noted that the generic term *Celtiphaga* B. & L. (1922), used for the hackberry butterflies, will fall to *Asterocampa* Rob. (Seitz, Macrolep., Vol. V, 549, 1916); this reference was evidently overlooked by the authors. J. McD.

Mailed Friday April 30th, 1926